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VOLOGDA OBLAST, USSR

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Vologda Oblast was formed on 23 September 1937 from the southern part of the former Severnaya Oblast and the eastern part of Leningrad Oblast. It is considerably smaller in area (143,000 square kilometers) than Arkhangel'sk Oblast, Komi ASSR, or Karelo-Finnish SSR, but it outstrips them in total number and density of population.

The oblast economy is based on the lumber industry, dairy-cattle raising, and butter production.

Agriculture, especially flax cultivation, plays a large role in the oblast's economy. The oblast exports the following products outside its own borders: timber, cellulose, paper, oak extracts, machines for the lumber industry, glass, linen, canned milk, fresh butter, and other products.

The territory of Vologda Oblast is a vast, gently rolling plain with poor drainage, gradually descending towards the north. Few hills and almost no sharp relief characterize the area. The average elevation of the land fluctuates between 150-200 meters above sea level, and the maximum elevation is 297 meters (in the extreme southeast).

The whole territory of the oblast can be divided into three parts according to its relief.

1. The western part of the oblast is characterized by morainic relief, more clearly evident in the region of the borders of the last (Valday) glaciation (along the line from Ustyuzhna-Chayka-Charozero) and on the Valday-Oneza shelf. The characteristic features here are a complex combination of morainic hills with lake basins, streams of eskers, and terminal moraines. Erosional forms do not play an independent role. The gangues were left chiefly by the glacial deposits. The territory of the western part of the oblast is

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occupied by the northern spur of the Valdai-Oneza shelf, which divides the vast swampy lowlands on the shores of Lake Oneza and Beloye Lake.

2. The central part of the oblast does not have such sharply defined forms of morainic relief as the western with the exception of some sectors (the Kubeno-Vaga watershed and others). The relief here is a mixed erosional-glacial one. Hill-dotted plains predominate, divided by wide lowlands with flat, swampy watersheds. The glacial-lake lowlands, Mologa-Sheksna, Kubena, Sukhona, and others, are covered with sands of fluvioglacial origin. The lowlands are divided by not very high hilly elevations, Sukhona Volga Plateau, the Sukhonskoye Zavoloch'ye (Portage), Galichsko-Chukhlonskiy, and others.

3. To the east of the border of the Moscow glaciation, on the line from Roslyatino-Velikiy Ustyug, there extends a territory with an even smoother undulating relief. This region was exposed to the action of Dneprovian (risskiy) glaciation of which almost no traces remain. Erosional activity is more evident in this region than in the central part of the oblast. The region is filled with western spurs of the North Urals, the height of which gradually increases in an easterly direction.

Vologda Oblast is extremely rich in nonmetallic mineral resources, chiefly limestones, marls, fireproof and building clays and quartz sands, beds of which are often found along the Sukhona, Yug, Kubena, Sheksna, and other rivers. The oblast has enormous peat deposits. The western regions of the oblast are especially rich in peat bogs.

The climate of Vologda Oblast is determined by its geographic location in the comparatively high latitudes and its proximity to the Atlantic and Arctic Oceans. The position of the oblast at a latitude of 59 to 61 degrees North favors a harsh climate, while the proximity of the oceans softens this harshness.

The continental climate increases in an easterly direction. The average January temperature fluctuates from minus 11 degrees [all temperatures centigrade] in the western to minus 14 degrees in the eastern part of the oblast. The average temperature for July decreases as one goes north. In Cherepovets it is 17.1 degrees; in Belozersk, 17 degrees; and in Vytegra, 16.9 degrees. The average annual temperature in the western part of the oblast is 2.4 degrees and in the eastern, 1.4 degrees. The length of the frostless period is only 115 days, but it is sufficient for growing the most varied agricultural crops, grains, flax, potatoes, cultivated grasses and others, because the amount of heat for the period with a temperature above 10 degrees (growing period) is sufficient. On the average, the sum of the temperatures in the growing period is 1,500 degrees, with fluctuations from 1,770 degrees in the south of the oblast to 1,260 degrees in the north.

Precipitation consists chiefly of slight, but prolonged snowfalls in the winter and protracted drizzling rains in the summer. The average annual precipitation fluctuates from 632 millimeters in the western part of the oblast to 573 millimeters in the eastern.

Vologda Oblast is situated on the chief watershed of the East European plain which separates the basins of the White and Baltic seas from the basin of the Caspian Sea. The flat watersheds are not distinctly defined, and this allowed the upper parts of some rivers to be connected by canals in the beginning of the 19th century, the Mariinsk, between the upper waters of the Vytegra and the Kovzha, and the Severodvinsk, between the Sheksna and the Porozovitsa rivers.

Today, the large rivers, Sheksna, Sukhona, Yug, and others, are used for navigation and have great importance for the economy of the oblast because of the poorly developed railway system. The smaller rivers are used for floating logs from the forested mountains in the hinterland to the railways. The Sukhona,

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Yug, Sheksna, and Vytegra have considerable potential water power. The oblast contains more than 1,000 lakes. The largest lakes, Beloye, Kubenskoye, and Vozhe, are rich in fish. The first two are part of the Mariinsk and Severodvinsk water systems. The smaller lakes are frequently found in the so-called Lake Region in the neighborhood of the border of the Valday glaciation, on the Valday-Onega shelf, and in the valleys of the large rivers.

The territory of Vologda Oblast is located entirely within the limits of the zone of coniferous forest. The forest covered almost the entire territory of present-day Vologda Oblast until the first Russian settlers appeared. Today, a considerable part has been felled. The forest occupies one half of the total area today. There is a strong admixture of Siberian tree types in the vegetative cover of the eastern half of the oblast; the larch grows as far north as the shores of Lake Onega. European types predominate in the western part of the oblast, especially European spruce and pine, which are found throughout the entire oblast. Coniferous varieties comprise four fifths of all timber reserves in the oblast, and spruce alone, three fifths. The larch varieties are found chiefly in the southern regions, while birches and aspens are more widely distributed. Small quantities of lindens, maples elms, and oaks are also to be found.

Swamps cover a considerable portion of the oblast. They are especially frequent in the western part. The lowland swamps are widely distributed in the valleys of Chagodoshcha, Suda, Andoga in the Mologo-Sheksna Depression, along the Upper Sukhona, and in other places. The flat, swampy watersheds of the Mologa and the Suda (Ulomskiye swamps, the Chisti, and others), the Sukhona and the Yug, and others are examples of the wide distribution of swamps of upland type.

About one tenth of the territory of Vologda Oblast is meadowland. Settling along the shores of the large rivers and lakes, the people cleared the forests from the shore regions and used the areas formed thereby for pasturing cattle. The most valuable fluvial meadows are located in the river valleys of the Sheksna, the Kubena, Lake Kubenskoye, the Sukhona, and have long been a base for intensive dairy-cattle raising. The dry meadows considerably exceed the fluvial in area; however, they are far inferior with respect to quality of hay and yield.

The soils of Vologda Oblast are distinguished by great variety because of the variegated vegetative cover and the different origin of the basement rocks. Most frequently encountered are podzolic soils, developed on sandy loam, and argillaceous soil, the red-colored products of the weathering of Permian marls and other substrata. Podzol-swampy and swampy soils are distributed in the lowlands of Lakes Beloye, Kubenskoye, Vozhe, the valleys of the Suda, Sheksna, Kuloy, and the upper Sukhona. Directly on top of the coal limestones or Permian marls are developed the so-called readzin, rather rich soils distributed along the Valday-Onega shelf and the middle and lower Sukhona. The alluvial soils in the river valleys of the large rivers are covered by fluvial meadows. The ancient colonization of the Sukhona-Volga plateau and other southern regions naturally resulted in a considerable change in the soil structure as a result of the felling of forests, plowing, and pasturing of cattle. With careful cultivation and fertilizing, the Siberian forest soils give high yields.

According to the data of the all-Union census for 1939, the population within the borders of present-day Vologda Oblast amounted to 1,590,000, and the density was 11.1 persons per square kilometer. In 1939, the municipal population of Vologda Oblast consisted of 287,000 persons, or 18 percent of the total.

Before 1917, there were only a few large industrial establishments, such as the Sukhona paper-pulp plants, the Krasavinskaya Liven Factory, and the Vologda railroad shops. Nine tenths of the population was employed in agriculture.

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Toward 1939, the portion of the population occupied in agriculture decreased to 53 percent, and the number of industrial workers increased to 21.4 percent. Today, gross industrial production is six times that of the prerevolutionary period.

The lumber industry is the largest in the oblast. Almost two fifths of the total industrial production comes from logging and wood processing. Forests occupy half of the total territory of the oblast. The most forested regions are found in the north and east of the oblast where the amount of forest-covered area increases to 70 and even 80 percent. About half of all the forest reserves are concentrated in the Sukhona and Yug basins. The basic logging regions are located here. Timber is floated to enterprises of the timber-processing industry at Sokol and also beyond the borders of the oblast, to Kotlas and Arkhangel'sk. In the western part of the oblast the basic logging regions are situated along the Mariinsk water system, where a large part of the timber is floated to Leningrad and the Volga, and a small part is processed by sawmills on the Vytegra and Koyzha. The least-forested areas, where the amount of forest-covered area decreases to 20-30 percent, are found in the immediate vicinity of Vologda and Cherepovets. This is the most densely populated part of the oblast, and the forests here have been largely felled. Logging here is on a small scale, whereas the timber-processing industry, especially cellulose-paper production, reaches the greatest development (at Sokol). The timber arrives here by water from the eastern and northern regions by way of the Sukhona and the Kubena.

The lumber camps whose personnel fell trees within the borders of Vologda Oblast and equipped with trailer tractors, motor saws, and other apparatus which have sharply increased labor productivity. Until the Great Fatherland War, the oblast felled more than 10 million cubic meters of lumber annually.

The timber-processing industry of Vologda Oblast includes sawmills, plywood, cellulose-paper, and wood-pulp enterprises. The largest center for timber processing is Sokol. This city is located where the Moscow-Arkhangelsk railway cuts across the Sukhona River. Sokol gets timber floated down the Kubena and the Sukhona and also brought in by railway. The city exports saved lumber, plywood, cellulose, and oak extracts. Kharovsk, Devyatiny, Tot'ma, and Vologda are other centers of the timber-processing industry. The group of sawmills located along the Mariinsk river system ships the finished products by water to Leningrad.

The metalworking industry showed rapid development during the prewar Five-Year Plans. All enterprises of the metalworking industry can be divided into three groups according to specialization. To the first group belong enterprises for forest-machine building. They make timber-hauling vehicles, wood-stacking platform trucks, wood-joining machines, presses for the paper industry, and sawmill frames. The second group includes enterprises for transport-machine building, locomotive and railroad-car repairing, and river-boat building and repairing. The third group of enterprises of the metalworking industry includes plants which make agricultural machinery and implements.

The glass industry was created during the first Five-Year Plan as a result of the construction of one of the largest mechanized glass plants in the Soviet Union, "Belyy Bychok" in Chagoda. Till that time there were in the oblast four small glass plants in Chagodoshenskiy, Ust'-Kubenskiy, and Kharovskiy rayons, working on local quartz sands. The Chagoda mechanized glass factory also works on local quartz sands. It produces four fifths of all the glass made in Vologda Oblast and annually turns out several million square meters of glass.

The light industry of Vologda Oblast includes flax-processing and linen-textile production. Bristle brushes, knitted wear, leather shoes, and sheepskin coats are also produced. Eighteen plants for the primary processing of flax serve the Krasavino and Vologda flax-textile combines. The Krasavino combine turns out

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up to 85 percent of the gross production of the oblast linen-textile industry. It is one of the largest textile enterprises in our nation and annually produces tens of millions of meters of linen fabrics (tablecloths, napkins, towels, etc.). It was built during the First Five-Year Plan.

Of the remaining light industry enterprises, it is necessary to mention the largest bristle-brush factory in the USSR at Velikiy Ustyug, and several sewing factories in Vologda and Cherepovets which supply local needs, as well as the shoe factory and the large sheepskin-coat plant.

The food industry is represented in the oblast by various branches: butter making, canned milk, vitamin, flour, bread baking, confectionery, meat, fish, distilling, and beer brewing. It is almost totally based on local agricultural raw materials and has a large number of small enterprises scattered throughout the oblast.

The butter-making industry is based on dairy-cattle raising. Until the second decade of the 20th century, Vologda butter was one of the basic items of the export trade of Russia. However, all the plants were small and primitive, and all work was done by hand or through horse power. During the prewar Five-Year Plans, many powerful mechanized butter plants were constructed in the territory of present-day Vologda Oblast, chiefly in the southern cattle-raising regions. There are now 25 mechanized butter plants in the oblast, which produce half the fresh butter. The remaining plants, as a rule, are small in size and more or less evenly distributed over the oblast.

The canned-milk industry, also closely tied up with cattle raising, was set up after the Revolution. There are two plants, one in Sokol and the other in the workers' settlement of Molochnoye. The Sukhonskiy Plant in Sokol is one of the largest canned-milk industry enterprises and annually produces millions of cans of condensed milk which are distributed throughout the USSR. Of the remaining food-industry enterprises, the largest are the vitamin factories in Vologda and Ustyuzhna.

Vologda Oblast has considerable fuel and energy resources, wood, peat, and water power. During the prewar Five-Year plans, a considerable number of thermal and hydroelectric plants were constructed. Almost nine tenths of all the electric energy produced in 1947 came from stations run on wood.

Toward the end of 1948, there were in Vologda Oblast more than 5,000 kolkhozes, which included more than nine tenths of all the sown area. There are 21 sovkhoses in the oblast, almost all of which are given over to dairy-cattle raising. The sovkhoses are concentrated completely in the southern cattle-raising regions. About 80 MTS, more or less equally distributed throughout the territory of the oblast, serve almost seven tenths of the total number of kolkhozes. About 1946, 69 kolkhoz and interkolkhoz hydroelectric plants were constructed in Vologda Oblast, chiefly in the eastern areas. The small kolkhozes are now being consolidated.

More than one fourth of all the territory of Vologda Oblast is devoted to agriculture; 31.4 percent of this area is used for crops, 29.3 for haying, 36.8 for pasture, 1.9 for truck gardens, and finally, 0.1 for gardens and vineyards. Two thirds of the agricultural area is devoted either to production of fodder or to pasture. This emphasizes the leading role of cattle raising in the agriculture of the oblast.

Agriculture is concentrated in the southern portions of the oblast where 60-65 percent of the total area is devoted to crops of cattle raising, as compared with 15-20 percent in the northern and eastern portions.

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Before 1917, the area sown to grains constituted nine tenths of the total sown area. During the Five-Year plans, the area sown to grains decreased sharply (to 68.9 percent in 1948), and industrial crops such as vegetables, potatoes, and sown grasses were sown to larger areas. Wheat is now sown in all regions of the oblast and constitutes almost 10 percent of the total sown area. Sowing of flax has almost doubled, potato planting has increased $2\frac{1}{2}$ times, vegetable planting three times, and sown grasses more than seven times. The change in the allocation of the sown area gives evidence of the intensification of agriculture, the creation of a stable fodder base for the growing cattle-raising industry, and the increased attention devoted to industrial crops. Yields have increased considerably in the Soviet period.

Cattle raising in Vologda Oblast is developing on a base of rich fluvial meadows and sowings of fodder crops which have been greatly extended during the Soviet period. The oblast is noted for the rich fluvial meadows of the Sukhona, Kubena, Sheksna, Mologa, and the Kubena, Komel', and Kuloy lowlands which give harvests of high-quality hay, up to 40 quintals per hectare. The dry meadows are more widely distributed, but their hay is of much lower quality. About one eighth of the total sown area of the oblast was used for fodder crops (clover, Vologda timothy, and others) in 1948. The area sown to them increased to 25-30 percent in the regions surrounding Vologda and Cherepovets.

The creation of a stable fodder base for kolkhoz cattle raising is progressing along two lines: (1) the introduction of the grassland system of agriculture which insures the best combination of field cultivation and cattle-raising; and (2) improvement of the natural fodder lands. On 1 January 1949, more than 99 percent of all kolkhozes in the oblast adopted grass-crop rotation. The seven-field system was the most widely adopted. Interfarm crop rotation is widely practiced. This provides commercial dairy farms with local fodder and also increases the yield of the meadows.

More than two thirds of all livestock in the oblast are cattle; cows comprise 80 percent of the total number of mature animals. The Yaroslavskiy and Kholmogorskiy breeds predominate along with the famous local Domshinskiy breed which is distinguished for its extremely high productivity. Domshinskiy cows give milk with up to 4.5-percent fat content, and produce up to 2,500 liters of milk annually. Dairy-cattle raising is concentrated around Vologda and Cherepovets. In these areas there are as many as 30 to 40 head of cattle per 100 hectares of natural hay. Toward the northwest, north, and northeast, the density of cattle decreases. Horses are more evenly distributed throughout the oblast because the logging centers are concentrated in the northern and eastern regions, and they also require a considerable amount of hauling power. The distribution of pigs, sheep, and goats coincides with the distribution of cattle.

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